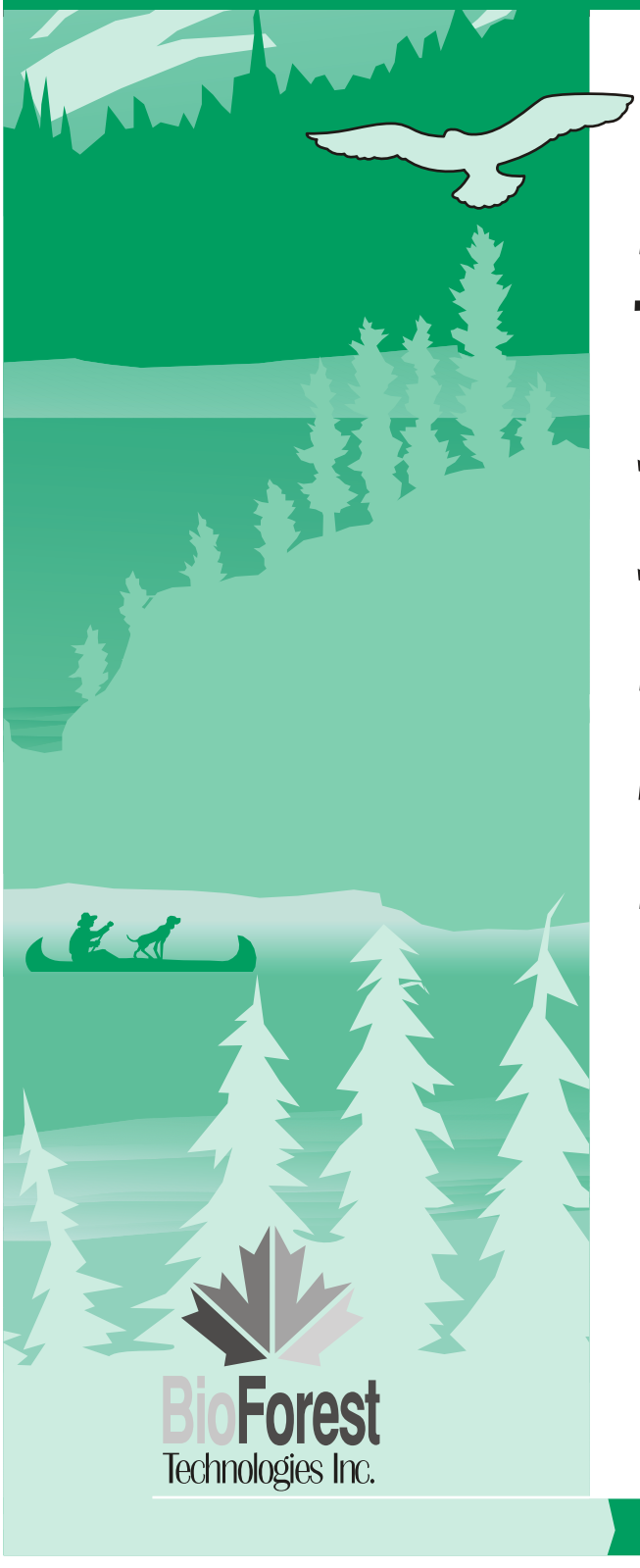
Lake Superior State Forest Sustainable Forest Management Pilot Project

REPORT 1



Project Summary: The Lake Superior State Forest Sustainable Forest Management Pilot Project

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February 28, 1999

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1. Introduction

In September of 1997, a proposal was drafted by BioForest Technologies Inc., to develop a pilot for a "new" sustainable forest management (SFM) planning system for the Michigan Department of Natural Resources (MDNR).

The proposal was introduced in the following manner:

"*The Michigan Department of Natural Resources is interested in developing a new forest planning system that will meet international certification standards for sustainable forest management. The Department is looking for a substantial re-evaluation of their current management process, and specifically is interested in a process substantially similar to that outlined in the CSA Standard Z808-96- A Sustainable Forest Management System.*

The Great Lakes Environmental Protection Fund (GLEPF) has expressed similar interest in collaborating in the development of a Sustainable Forest Certification Process that will meet the Sustainable Forest Management Standards that have been established by the Forest Stewardship Council (FSC).

GLEPF and the State have indicated they would welcome the opportunity to collaborate on a project to design a system that will meet both a Criteria and Indicators-based certification standard such as the CSA as well as the FSC certification standards.

The Lake Superior State Forest (LSSF), in Michigan's Eastern Upper Peninsula, is a one million acre state-owned forest managed as one unit out of the Newberry District office. The state management team at LSSF has made substantial efforts at developing a collaborative ecosystem-management system for the LSSF and the nearly two million acres of industrial, federal and small private lands that surround the State forest. The LSSF presents an ideal land base to design this management system around, and as importantly, the staff and collaborators currently involved in managing the LSSF have demonstrated a powerful willingness to work "outside of the box" in order to develop a system that will better protect and sustain the ecosystems and economies of the Upper Michigan area. The LSSF will be used as the test management unit for this pilot project."

The proposal, when paired with a proposal from Smartwood to address the Forest Stewardship Council (FSC) component of the effort and packaged

by Mater Engineering, was ultimately successful in securing funds from the Great Lakes Environmental Protection Fund (GLEPF) to complete a year long pilot project.

The role of BioForest Technologies Inc. in the project was to design the forest management planning system according to the template outlined in the Canadian Standards Association (CSA) Standard Z808-96- *A Sustainable Forest Management System: Guidance Document*. BioForest utilized the forest planning expertise of Callaghan and Associates Inc., and the ecological and public consultation expertise of CMC Consulting to assist in completing the project.

Smartwood was to provide a "scoping" on the new system to identify likely compliance with the FSC's sustainable forest management certification standard. Mater Engineering, Ltd. was the project manager.

MDNR provided excellent staff and resource support for the project, supplying information in a timely manner and hosting all meetings with MDNR and the three public workshops that were held over the course of the project. Bill Rockwell, from the Lansing office, along with Bernie Hubbard and Les Homan, from the Newberry office, were particularly helpful.

The project required some 11 specific deliverables in accordance with the proposal approved by the GLEPF. These deliverables, along with the 12 reports written to address them, have been listed in Table 1. We have included a summary of each of the reports in Appendix 1. In addition, it became apparent following early meetings with MDNR, that an SFM planning guide, summarizing the components represented by the 11 individual deliverables, would be very useful. A planning guide, although not required as part of the proposal, was added to the project and completed within the original budget allotments, although it did help to push the ultimate completion date of the project back some six weeks. The planning guide is discussed further in Section 2 of this report.

The project included several workshops. Three were targeted specifically at MDNR staff, and were intended to ensure that the product being developed was well understood and reasonably practical. Three public workshops, involving over 60 LSSF stakeholders, were intended to solicit public input into the development of a public consultation process for inclusion in the planning template, and the development of local criteria, values and indicators of SFM for the Lake Superior State Forest (LSSF).

Table 1. Reports produced over the course of the Lake Superior State Forest Sustainable Forest Management Pilot Project.

Event	Deliverable	Associated LSSF SFM Pilot Project Reports
Commitment	Report - Commitment to SFM: An assessment of the corporate challenge	Report #2: An Assessment of the Michigan Department of Natural Resources' Commitment to Sustainable Forest Management
Responsibilities	Report - Roles and responsibilities defined for implementing SFM on public lands in the LSSF	Report #5: Roles and Responsibilities for Forest Management Planning in the Lake Superior State Forest
Public participation	Report - Public consultation opportunities within the LSSF - a review and proposal	Report #6: Public Participation in Forest Management Planning in the Lake Superior State Forest: Finding the Right Pathway
Define forest area	Report - Overview of the LSSF	Report #3: The Lake Superior State Forest: A Description Report #4: Michigan Department of Natural Resources Operations Inventory: Survey Results
Identify values and goals	Report - Values and goals for SFM in the LSSF	Report #7: Establishing Criteria and Indicators for the Lake Superior State Forest Report #8: Workshop I Summary: Values and Indicators of the Lake Superior State Forest Report #9: Workshop II Summary: Establishing Targets, Practices and Responsibilities for the Indicators of the Lake Superior State Forest
Select indicators	Report - A process for selecting indicators of SFM in the LSSF	Report #7: Establishing Criteria and Indicators for the Lake Superior State Forest Report #8: Workshop I Summary: Values and Indicators of the Lake Superior State Forest Report #9: Workshop II Summary: Establishing Targets, Practices and Responsibilities for the Indicators of the Lake Superior State Forest
Evaluate risks	Report - An overview of environmental risks associated with SFM in the LSSF	Report #12: Risk Assessment of Forest Management for the Lake Superior State Forest
Forecast	Model - A tool for forecasting silvicultural effects in an SFM system	Report #10: Modeling Forest Management on the Lake Superior State Forest Report #11: Wildlife Habitat Projections for 15 Species in the Lake Superior State Forest Report #4: Michigan Department of Natural Resources Operations Inventory: Survey Results
Communication	Report - An assessment of communication requirements within an SFM system in the LSSF	Report #6: Public Participation in Forest Management Planning in the Lake Superior State Forest: Finding the Right Pathway Report #13: A Forest Management Planning Guide for the Lake Superior State Forest
Review and improvement	Report - A stakeholder review of a pilot SFM system for the LSSF	Report #1: Project Summary: The Lake Superior State Forest Sustainable Forest Management Pilot Project (see Appendix 2) Report #9: Workshop II Summary: Establishing Targets, Practices and Responsibilities for the Indicators of the Lake Superior State Forest
Summary	Report - An SFM system for the LSSF	Report #1: Project Summary: The Lake Superior State Forest Sustainable Forest Management Pilot Project
Planning guide	Add-on	Report #13: A Forest Management Planning Guide for the Lake Superior State Forest

The workshops and subsequent mail outs also provided the opportunity for workshop participants to offer comments on both the process that was used to create the planning system and the planning guide itself. As a matter of maintaining the transparency of the process used on the project, all written comments received from Workshops I and II are recorded in the summaries for those workshops (Report #8 and Report #9, respectively). Comments received at or after Workshop III (February 8-9, 1999) but before February 28, 1999 have been recorded in Appendix 2 of this report. Where possible, the comments have been addressed with changes to the planning guide. In other cases, they have been left as indicators of some of the concerns that stakeholders have about the project.

2. The Planning Guide

The planning guide may prove to be the most significant product of the project. The guide provides direction for developing a forest management plan. It describes the assignment of responsibility and authority for forest management activities, the role of the public in the planning process, the establishment and use of criteria and indicators, and the collection and analyses of background information to support the planning process.

The guide provides suggestions on actual requirements of a forest management plan. Processes for establishing terms of reference, consulting the public, and documenting pertinent planning information are provided. Also included is a process for developing a forest description consisting of the history, administrative make-up, socio-economic profile, and condition of the forest. Methods for incorporating publicly-derived criteria of SFM into broad forest management direction and more specific management objectives, targets and strategies are presented.

The guide specifies processes that can be used to evaluate management alternatives and determine the ability of each alternative to sustain the forest. Ultimately, the management strategy that, over time, best produces the desired benefits or outcomes, as described through the public consultation process, will be the one used to direct operational planning.

Details for operational planning for the recommended 10-year planning period, including values protection planning, silvicultural planning and access planning are described. Monitoring of activities via publicly-identified indicators is discussed, along with a template for ensuring that continual review and improvement becomes a feature of planning

activities. Finally, a section on annual operational planning and monitoring is included.

3. Comparison of the Current vs. Proposed Planning System

This project has developed a reasonable process for conducting integrated, multi-value forest management planning. The planning system proposed through this project evaluates the social, economic and environmental benefits provided to the people of Michigan from their State forests, and proposes methods for finding the best solutions for optimizing them.

In comparing the proposed system with the current LSSF system, the reader should bare in mind three things. First, the proposed system has never been implemented in the real world and because of that remains only a well developed concept. Second, the current LSSF operational system works reasonably well. In part, this is because the field staff have been working on the land base for a long time, understand the local conditions and silviculture, and have a very strong local working relationship across the Forest Management, Fisheries and Wildlife Management Divisions. To a certain extent this has been accomplished in spite of the administrative system in which they are working. Third, it would be inappropriate for the principal facilitators/authors of the new system to advocate too strongly the merits of their own work. These comments will be more credible once they are confirmed by an independent third party.

Having said that, we offer the following comparison. The system proposed is substantially different from what is currently practiced. The new system has a requirement to forecast for 150 years, while the current system does not require forecasting. The new system requires a review and plan for the whole forest every 10 years, while the current system looks at a different tenth of the forest every year, but never requires an assessment of the forest in its entirety.

The new system requires all timber and non-timber values to be considered in the plan. The current system reviews non-timber values at the compartment review stage, but does not have a process for tracking these holistically, nor for looking at landscape concerns. Finally, the new system requires the explicit participation from experts in fish, wildlife, parks and "other values" throughout the planning process, while the current system

counts on their input much closer to the final review of the compartmental plans. Other comparisons are summarized in Table 2.

Table 2. Principle differences between the proposed and current management systems.

Feature	*Current System*	*Proposed System*
Planning Cycle	One year cycles	10-year cycle
Public consultation	yes	yes
- criteria determination	N/A	yes
- indicator determination	N/A	yes
- target setting	N/A	yes
Timber values	yes	yes
Non-timber values	implicit	explicit
Multi-disciplined planning team	no	yes
Transparency	implicit	explicit
Strategic Planning	no	yes
- whole forest evaluation	no	yes
Operational planning	yes	yes
- forest level	no	yes
- compartment level	yes	yes
Annual Planning	yes	yes
Forecasting	no	yes
Forest ecosystem consideration	implicit	explicit
Consideration of environmental risks	implicit	explicit
Assessment of forest history	implicit	explicit
Assessment of socio-economic impacts	implicit	explicit

4. Analysis

As indicated above, the objectives of the project included designing an SFM planning system that would meet both the CSA and FSC standards for sustainable forest certification. In a separate report, Smartwood will provide an evaluation of the project from an FSC perspective. As previously mentioned, from a CSA perspective, it is inappropriate for the principal facilitators/authors of the new system to promote too strongly the value of their own work. The observations made will be substantially more credible once they are confirmed by an independent third party.

Fitting the CSA system into Michigan requires some allowance for cultural differences between Canada and the United States. As an example, CSA Criteria 6, titled "Accepting Society's Responsibility for Sustainable Development", has a significant requirement to address Aboriginal treaty rights and unique needs. This appears to be a larger issue in Canada than

in Michigan. Although the topic was raised during this project, Native issues appear, in Michigan, to be addressed in a forum different than forest management planning.

Further, at the time of this writing, there are no forest management systems anywhere that have been registered by the CSA system. It is reasonable to expect that as the CSA system is tested on real forests that the system itself will be substantially changed. We would therefore submit that non-compliance with the CSA system as it is currently defined should not automatically be viewed as a critical flaw in the designed SFM system. The feedback received from reviewers suggests that this system should meet State and local requirements for forest ecosystem management in a manner that is relatively pragmatic and acceptably rigorous.

The six CSA criteria (Appendix 3) and associated indicators were the starting point for the public workshops held over the course of the project. Project Report #7 (Establishing Criteria and Indicators for the Lake Superior State Forest) details the final set of values and indicators that was developed for local use. We note that there were some 26 CSA indicators that were considered by two public workshops, one MDNR staff workshop and further assessment by consultants, that were not found to be useful in the final set proposed for the LSSF. This may be regarded as a non-conformance in a CSA system audit, but the careful consideration given to the indicators prior to dismissal would suggest that the issue may be one of inappropriate CSA system requirements.

5. Overview: Meeting the CSA Requirements

The framework for the CSA system requires that the following four components be in place. The proposed system has each of these in place.

Commitment
Public Participation
Management System Elements
- Preparation
- Planning
- Implementation
- Measurement/Assessment
- Review and Improvement

Continual Improvement

We suggest that the system designed will differ most substantially from CSA in the Commitment and Public Participation components.
We have identified elsewhere (see Report #2: An Assessment of the Michigan Department of Natural Resources' Commitment to Sustainable Forest Management) that MDNR will need to improve their explicit corporate commitment to SFM and expect that would be identified in a CSA audit.

As described by CSA, the system presented ensures that the public has significant opportunity to comment on criteria and indicators, and identify environmental, recreational or cultural values for consideration in management. The proposed system is more open than is prescribed by the CSA standard, however it meets all the requirements of the standard. The new system will likely require more interaction between the planning team and the public to ensure that useful information is gathered. The proposed system does not advocate the abrogation of state responsibility for management of the public forest.

The elements within the system framework heading "Management System" have been addressed in a manner that appears to be in compliance with the CSA requirements.

Preparation: The process for defining the forest area is clear. The public involvement in defining criteria, goals and indicators has been established.

Planning: The review of current position and regulation has been defined through sections in the planning guide on forest history and review of past operations. Evaluating risks is not specifically addressed but, as indicated in Project Report #12 (Risk Assessment of Forest Management for the Lake Superior State Forest), the planning process advocated encompasses a reasonable risk assessment process through its values identification process and the requirement to test the sustainability of management alternatives over the long term.

As required by CSA, the proposed system addresses the following items:

- a summary of results and activities for the previous planning period;
- a statement of values and goals;
- a statement of management strategy;
- a statement of management objectives for each indicator;
- a summary of current quantitative information for each indicator;
- a description of the assumptions and analytical methods used for forecasting;

- a description of forest management activities to be undertaken;
- an implementation schedule of SFM activities;
- a monitoring procedure; and
- a demonstration of links between annual operations and the long-term SFM plan.

Implementation: It is apparent that the MDNR has recognized a need to develop a more integrated approach to planning their forest ecosystems. There has been substantial evidence that the Department is actively working towards that goal. The planning system presented will require a number of changes in both the management tools used by MDNR and the corporate approach to using them. The system presented offers an excellent template to pursue such an integrated approach. Until the Department declares a strategic commitment to pursue such activities, it will be very difficult to make meaningful tactical decisions.

Measurement/Assessment: Monitoring and assessment is one of the weak points of most forest management systems. In order to make criteria and indicators meaningful and to implement adaptive management fully, monitoring and assessment must be amply funded and carefully designed. In the proposed system, details of monitoring and assessment could not be completely described. This will develop as the planning system becomes operational.

Continual Improvement: Continual improvement is addressed in the monitoring, reporting and continuous improvement requirements of the proposed planning guide. During the planning cycle it will be critical that district supervisors carefully observe the planning process and continually review and, when required, revise the "system" described in the planning manual. If at the end of the 10-year process the system is obsolete, the supervisors will be faced with reinventing the system. The point of continual improvement will have been missed and the LSSF will suffer a setback in the progress it has made in SFM planning.

The authors believe that if the proposed system is implemented, the LSSF will be in a position to realize fully its tremendous potential, with a minimum of conflict. It will then be eligible, if the need arises, for certification under any forest certification system.

Appendix 1. Summaries of Reports from the Lake Superior State Forest Sustainable Forest Management Pilot Project

Provided in this appendix are brief summaries of the reports produced over the course of the Lake Superior State Forest Sustainable Forest Management Pilot Project. Summarized here are Reports 2-12. A summary of Report #13 can be found in Section 2 of this report.

Report #2: An Assessment of the Michigan Department of Natural Resources' Commitment to Sustainable Forest Management

On the basis of the Canadian Standards Association (CSA) requirements, we reviewed the Michigan Department of Natural Resources' (MDNR's) written commitment to sustainability. Report #2 summarizes the results of that evaluation. It discusses the legislation and guidelines that are relevant to sustainable forest management (SFM) for the LSSF. It evaluates how the MDNR's vision, mission and policy statements reflect its commitment to SFM, and how MDNR staff regard the usefulness of current departmental mission and policy statements.

The findings in this report indicate that generally MDNR has the appropriate documentation to support its commitment to SFM. The enabling legislation we reviewed makes provisions for SFM, and the MDNR and its Forest Management, Wildlife and Fisheries Divisions have appropriate mission or vision statements that, overall, are well understood by MDNR staff. Some codes of management practices are in place, and it is planned that more will be developed. Report #2 outlines suggestions for improvements in certain areas (e.g., reviewing and updating policy on a regular basis) that would strengthen MDNR's written commitment to SFM.

Report #3: The Lake Superior State Forest: A Description

Report #3 describes the lands that make up the LSSF, on the basis of operations inventory data provided by the MDNR. It provides a perspective on the size and composition of the LSSF. Many of the data presented are included in the proposed forest management plan for the LSSF (Report #13). Such data are required for CSA or Forest Stewardship Council (FSC) certification of an SFM system.

Report #3 describes both the forest and land resources of the LSSF. Area information is presented on the forest areas, stand cover types, area classes, influence zones, age classes, stocking classes, tree size classes, forest health,

featured wildlife species and forest soil types. Forest growing-stock volume and mean annual increment (MAI) information are presented by forest cover type and age class. A set of typical summary tables that could be included in future forest management plans for the LSSF is provided.

Report #4: Michigan Department of Natural Resources Operations Inventory: Survey Results

Report #4 summarizes the results of a survey undertaken to gain a better understanding of MDNR's operations inventory. The survey helped to identify key pieces of information for forest management planning, quantifying indicators of sustainability and developing forest management models. The 1997 LSSF operations inventory data formed the basis for the Strategic Forest Management Model (SFMM) of the LSSF. Report #4 is a supporting document for Report #3, *The Lake Superior State Forest: A Description*, and Report #10, *Modeling Forest Management on the Lake Superior State Forest*.

In the survey, respondents were asked to rate 33 individual inventory stand attributes (data elements) in terms of reliability and usefulness, and to give each an overall ranking with respect to its use in forest planning or in determining forest/landscape sustainability indicators. Respondents were also asked to describe some of the strengths and weaknesses of the operations inventory for the purposes of compartment planning, yield estimation, and resource values identification.

Survey results showed that the operations inventory contains a vast array of variables, some more reliable and useful than others, and is a sound planning tool for compartment timber sales. In general, data usefulness and overall ranking scores exceeded those of reliability. The operations inventory is weakest in dealing with wildlife variables. The results of the operations inventory survey helped to guide our use of the operations inventory data.

Report #5: Roles and Responsibilities for Forest Management Planning in the Lake Superior State Forest

Forest management systems intended to be certified according to CSA standards for SFM need to be able to demonstrate that the roles and responsibilities for management have been well defined. Report #5 discusses how an auditor or other public reviewer should be able to follow the management system of a forest from the corporate commitment to SFM

(i.e., policy), through the strategic management plan, down to the practices level, and then from the practices level back up to the policy level.

Report #5 also discusses the likely requirements for addressing the roles and responsibilities aspect of a MDNR SFM system. It suggests who is responsible for:

- creating a policy that commits MDNR to SFM;
- creating a procedure for writing an SFM plan;
- compiling an SFM plan for a specified forest area;
- reviewing and approving implementation of an SFM plan;
- conducting forest operations in accordance with an approved SFM plan; and
- reviewing and improving the operations, plan, procedures and policy.

Report #6: Public Participation in Forest Management Planning in the Lake Superior State Forest: Finding the Right Pathway

Members of the public who have concerns about the LSSF must have the opportunity to make their views known during the forest management planning process. Report #6 addresses the results of our discussions with LSSF stakeholders regarding public participation in the LSSF. It incorporates the input we received from MDNR staff and LSSF stakeholders at Workshop I (Report #8), Workshop II (Report #9) and Workshop III of the LSSF SFM Pilot Project.

Report #3 provides suggestions on ways to communicate with the public and engage members of stakeholders groups as well as the general public in the forest management planning process. Generally stakeholders felt that an effective mechanism to ensure that the public's concerns are presented to the planning team is a series of open meetings. Report #3 also presents the recommended text for the public participation section of the LSSF planning guide (Report #13) proposed by the LSSF SFM Project. The proposed guidelines for public participation in the LSSF address and satisfy the CSA requirements for public participation, while incorporating the specific concerns expressed by the LSSF stakeholders.

Report #7: Establishing Criteria and Indicators for the Lake Superior State Forest

Prior to beginning the formal planning process on a particular forest, it is necessary to identify what people value about that forest. The broad values or characteristics that people identify as important to preserve are defined as "local criteria". Indicators measure how well the local criteria are being maintained and enhanced. Local criteria and indicators help forest planners to assess sustainability and report the results to the public.

Report #7 describes a process for establishing local criteria and indicators. It discusses identifying local criteria and indicators, setting targets and practices for indicators, categorizing indicators as levers (i.e., indicators that can be managed) and gauges (i.e., indicators that can only be monitored), assigning responsibility for indicators, monitoring and reporting on indicators, and reviewing local criteria and indicators. Report #7 also discusses how the process was used to develop a preliminary set of local criteria and indicators for the LSSF. For that task, two workshops (Workshop I and Workshop II - Report #8 and Report #9, respectively) were held with LSSF stakeholders where the following 12 local criteria were identified:

1. Ownership Patterns
2. Institutional Processes
3. Recreation
4. Multiple Use
5. Spiritual
6. Social/Cultural
7. Economic Health
8. Biodiversity
9. Healthy Forests
10. Biological Cycles
11. Quality of Water and Soil Resources
12. Unique Features

Report #7 describes the indicators that were assigned to each LSSF criterion. It also provides a comparison between LSSF indicators and the indicators that have been developed by the CSA.

Report #8: Workshop I Summary: Values and Indicators of the Lake Superior State Forest

Workshop I was held with MDNR staff and LSSF stakeholders on June 25 and 26, 1998 in Newberry, Michigan. The purpose of Workshop I was to provide

LSSF stakeholders with an overview of the Lake Superior State Forest Sustainable Forest Management Pilot Project and to gather stakeholder input on key components of an SFM plan for the LSSF, specifically on values, indicators and public participation.

Report #8 summarizes the results of the values and indicators portion of Workshop I. It lists the 12 broad values that were identified by workshop participants and the indicators assigned to each one. Participants were asked to evaluate the indicators on the basis of the following five properties of a good indicator: relevant, understandable, measurable, feasible, and predictable. Report # 8 summarizes the results of that evaluation. It also presents a list, developed by the LSSF SFM Project Team, of suggested indicators for the 12 values. This list of indicators was derived directly from the list developed at the workshop, with some modifications, and was reviewed by LSSF stakeholders at Workshop II (Report #9). Report #8 also discusses how the LSSF values and indicators developed at Workshop I compare with those developed by CSA and those developed by the Great Lakes Forestry Alliance.

Report #9: Workshop II Summary: Establishing Targets, Practices and Responsibilities for the Indicators of the Lake Superior State Forest

Workshop II was held with MDNR staff and LSSF stakeholders on October 21 and 22, 1998 in Newberry, Michigan. A key objective of Workshop II was to review and, where necessary, revise the list of values and indicators developed at Workshop I. Also at Workshop II, the processes of setting targets, defining practices and assigning roles and responsibilities for each indicator were begun. Report #9 summarizes the results of Workshop II.

Participants in Workshop II made several modifications to the list of values and indicators that was presented in the summary report for Workshop I. Changes to the list included giving new titles to some values, adding new indicators, moving some indicators between values and completely removing others. The possibility of adding a separate value that addresses the consumption of forest products was discussed and will require further consideration by stakeholders. Preliminary attempts were made to identify targets and practices for the LSSF indicators and establish who should be responsible for particular indicators. Report #9 describes the progress that was made on these tasks.

Report #10: Modeling Forest Management on the Lake Superior State Forest

A model was constructed to forecast forest development in response to management actions in the LSSF. The platform used to develop the model was the Strategic Forest Management Model (SFMM), an optimization model developed by the Ontario Ministry of Natural Resources for use in analysis and planning. Report #10 describes the components of the model, some of the parameters used, and the outputs that the model creates.

Report #11: Wildlife Habitat Projections for 15 Species in the Lake Superior State Forest

The forest description provided in Report #3 was limited to timber resources. The purpose of Report #11 is to extend the forest description to include some wildlife species. SFMM, which has been adapted for the LSSF (Report #10), has a wildlife component that can project habitat availability on the basis of forest management. It is a simple wildlife habitat supply model. Report #11 summarizes the preliminary habitat projections for 15 wildlife "indicator" species on the basis of SFMM.
It emphasizes a description of the procedure and explains the assumptions and limitations of the wildlife component.

Report #12: Risk Assessment of Forest Management for the Lake Superior State Forest

Environmental risk assessment is the process of identifying environmental hazards and their scope and developing and evaluating risk scenarios. Report #12 describes situations where there may be a need for an environmental risk assessment. It also discusses the processes for documenting risk assessment, identifying environmental risks, evaluating risk, and making environmental risk management decisions. Report #12 also provides an outline for a formal risk assessment.

Appendix 2. Summary of the comments from MDNR staff and LSSF stakeholders regarding the Lake Superior State Forest Sustainable Forest Management Pilot Project.

At the final LSSF SFM Pilot Project workshop (February 8-9, 1999, Newberry, Michigan), MDNR staff and LSSF stakeholders were given the opportunity to comment on the topics covered in the project reports. The following tables summarize the comments we received. We have tried to incorporate as many of the suggestions as possible into the final versions of the project reports.

Table A2-1. Comments from LSSF stakeholders regarding public consultation. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.

Written comments	• It was conveyed that a major problem with public consultation was failure to notify the general public. I believe the MDNR web page on the Internet is a good way of communicating with the public, explaining the process and notifying people when the meetings are to be held. Another way would be by contacting constituent groups who may pass along the news to their members.
	• The role of appointing the CAC is critical.
	• Change CAC to Citizen Involvement Group.
	• If citizen's advisory group is used, it should include statewide stakeholders as well as local representatives. • I have worked with citizens advisory groups (CAG) and find that there is commitment from various parties that I believe would not be there with just open meetings for the purpose of arriving at a plan. • I feel that the citizens advisory group is the best forum for developing a preliminary plan. The plan should then be taken to the general public for comment and possible changes in recommendations to the forest supervisors.
	• Revisions to public consultation: We hold an open meeting now for reviews and it doesn't work. No one shows up. I think we should stay with the CAC.
	• Public comments after decisions have been made: We seem to have a lot of this. I don't think it will change. We may be able to address issues better before decisions are made, but will still get comments afterward. • Don't drop the CAC.
	• I think you need to re-evaluate the need for a CAC. If you do not have one, you risk general acceptance of the plan and make your planning process similar to the Escanaba River SF planning process -- MDNR professionals write the plan and solicit public comment at various points along the way. A CAC will potentially add credibility to the plan and gain acceptance. I think you can have a series of public meetings along with a CAC and integrate the best features of both into the process.

[cont'd]

Table A2-1. Comments from LSSF stakeholders regarding public consultation. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.	
	Suggested changes to address concerns raised about the CAC: • CAC membership must be open to statewide participation – original personal invitations should go out to locals plus some others across the state. – the first CAC meeting should determine which public groups are missing; others should be invited as recommended. – CAC meetings should be broadly advertised. Any attendees who want to make a commitment to join the CAC should be allowed to join. • Set up a "friends group" to provide input on values, concerns, issues, and a diversity of perspectives on what action the MDNR should take. Input from the "friends group" would then be evaluated by the MDNR with the help of the CAC.
	• Goal - good suggestion that "public" includes those living in the area plus, equally, those living elsewhere in Michigan. • It's very important to contact the local people, the local landowners and business people. In the LSSF area in particular, local people may not be accustomed to being consulted or to commenting on public affairs. • The method of selecting members for the CAC is all-important. The CAC must be truly representative, not politically engineered; it must be open to any interested parties and to individual comments. An advisory group that consists solely of appointed people is not adequate. The group should also be open to voluntary, self-selected participation by other interested people. The group should consist of some appointed as well as "walk-in" participants. The public needs to be informed of its right to enter the citizens advisory process. The CAC should be open to non-local as well as local citizens. Continuity of personnel, at least some personnel, is vital. • Regarding revisions to CAC: Such revisions are fine, but you still need to have core people in this group who attend every time and have a long-term commitment. In other words, you still need a "standing committee" component to this advisory group. I think it should still be an advisory group, not just a group that airs its views. An impartial facilitator may be advisable for the group, and an impartial accurate record must be kept and made available to anyone. • It is very important that some local government officials (township supervisors, etc.) and some local business people (timber products plus other businesses dependent on forest values - tourism, recreation, etc.) be part of the advisory or input group. These people may need special persuasion to commit to this, but it is vital that they do. • The CAC may differ in part from one area of the LSSF to another, depending on local participants. People in Newberry, for example, may not have much knowledge of or interest in forest practices in Naubinway. • Important question: What if a change, for example, in public values occurs and this is not reflected in a change of values in the professional staff? This is where you'd have to have special meetings to forge a consensus between the public and the MDNR management. For example, if the MDNR feels the deer population needs to be decreased (which may be the case at present), but a large segment of the public wants high numbers of deer, then you need many meetings with the public (such as those MDNR is currently conducting to address the issues of people who feed deer herds to excess, farmers who are plagued by deer feeding on crops, and cattle getting TB infections from deer contact). Public education about professional views on management is vital.

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Table A2-1. Comments from LSSF stakeholders regarding public consultation. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.	
	• It is essential that the CAC be non-political, and subject to periodic change of membership. • Informing the public is crucial but should be widely based. The local population does not have exclusive right of management. • Complexity makes it easy to skip people or groups - what is the protection? • Broad-scale consultation should have various citizens conservation groups. • The CAC should maintain a mailing list of interested individuals and send them an agenda for each meeting. • Getting advice - make it citizens not local citizens. • After experiencing the simulated CAC session, I came to the conclusion that members of the CAC should have some formal training in resource/forest management practices. A group of well-meaning citizens on such committees just will not have the knowledge to function well. • It is a mistake to restrict thinking to LSSF. Should at least pay some attention to consultation and cooperation with other large land owners (e.g. Shelter Bay, TNC, MNA, etc.).
	• Could have developed more recommendations about use of media (e.g. Internet) for broad reach.
	• Need statement of commitment/responsibility to address individual complaint/concern.
Verbal comments	• The public should always have input directly into the MDNR. • The public should have an opportunity to comment on how the MDNR is complying with the plan. – the public should have an opportunity to comment whenever a decision is made. – notification of any change, decision, etc., should be sent to everyone on the mailing list. • Wording for consultation process should use either “3 level” or “3 tier” • Need more detailed outline of appeals process.

Table A2-2. Comments from LSSF stakeholders regarding criteria and indicators. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.	
Written comments	• Rather have a few indicators that we could do a very good job of measuring rather than lots of indicators that we measure marginally well.
	• Why forest rather than landscape, ecosystem? Only real focus is on timber.
	• Statement that technical expertise needed to be brought in at the point of establishing measures was good (definitive and could preclude future thrashing around). • Postings of forms, or their circulation (and concurrence by CAC or others), is also important. • Good stress on documentation. • Indicator reports should include assessment of measure performance.
Verbal comments	• Indicators require a more thorough analysis than illustrated by example forms (e.g. analysis at a landscape scale).

Table A2-3. Comments from LSSF stakeholders regarding SFMM and wildlife habitat modeling. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.	
Written comments	• Resource modeling will be critical to deciding which alternative plan to accept and use. Where will MDNR obtain the resource information and species models needed to make these decisions? It would be a pleasant surprise to find that these (reliable ones) actually exist for the Eastern Upper Peninsula (EUP) landscape. I'm not convinced that this resource information exists as it does in Canada. It may take substantial time to develop these.
	• Choice of models is critical and needs to be assessed continually. • Have some concerns about SFMM models but have not had a chance to study it fully.
	• Would like to see an assessment of different models, including SFMM. • Some suggested criteria for a model are: – ability to use (set objectives for) values other than timber and economics at the front end of the model, as opposed to evaluating them after running the model – ability to link to or directly incorporate a map of the forest cover in the modeling process so that spatial component of wildlife habitat models and landscape patterns and processes can be modeled.
	• Use of models must be tempered by semi-objective assessment by professional foresters/biologists.
	• Implication is that sustainability was measured by an aspatial optimization model (locking many decades out) as opposed to identification of trends with regards to consequences of near-term land use, forest fragmentation, and broad scoping of concerns and possible issues - some of which would never show up in SFMM. In other words, sustainability is broader than monitoring areas of forest types by age class and specific wildlife species. SFMM is simply too reductionistic. It may look reasonably at whether or not timber harvesting will hurt the sustainability of some species, but not at its effect on a wide range of ecosystem relationships based on land type associations, both quantifiable and quantitative in nature. In assessing sustainability, there is a need to identify a wide range of processes, relationships, unique, special, and sensitive flora, fauna and landscapes, then look at trends and impacts on these. SFMM may be too much of a time sink for limited benefit. • Wildlife habitat modeling prioritization or sequencing with timber modeling not well defined.
	• Modeling focused on timber objectives. What about modeling trail networks, etc.?

Table A2-4. Comments from LSSF stakeholders regarding the proposed planning guide. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.

Planning guide section		Comment
Overall guide	**Written comments**	• Analysis - paralysis. High potential to spend increasing amounts of money and manpower on planning and little to no money and manpower on implementation.
		• The concern seems to be that no matter how well certain factors in planning are accounted for, if the guide is used religiously from a to z, some things need to be spelled out to avoid following an old pathway (e.g. stands vs. other ecological unit) – specifically itemize monitoring - don't leave it up to planners – more specifics to ensure better awareness of non-CAC, but interested folks. • Integration of this plan with "other" values is critical.
		• CAC appears to be working closely with the Forest Supervisor and the District staff. However, compartment reviews have been conducted at a local unit level. Do you see a role for a CAC on the unit or do you see compartment reviews or local planning being done in a different context, or at a different level or scale? • How do you connect local detailed planning efforts to the broader District effort and involvement with a CAC? How do you integrate this into one streamlined effort?
		• It seems that there is a lack of logical flow from the values → indicators → objectives → targets → strategies – the disconnect appears to be between values/indicators and objectives/targets/strategies – the way objectives/targets/strategies were presented suggests that they need to be developed in consideration of but independent of the values/indicators, instead of for the values
		• Influence zones: should specifically mention wetlands (marshes, fens, bogs, swamps, etc.) as different from "water" (river, lakes). • Management and Policy Context: These items are very important - if the state government policy is one of resource extraction without regard for ecosystem management or sustainability, the planning will be of no use. • Management Objectives: The 4 listed items need to include reference to landscape ecosystem management and to cooperative, over-all, land-use planning with owners other than the State. Can't we have a specific management strategy for cooperative monitoring and continuing information exchange with non-public land owners, such as Shelter Bay, and also with other public land owners, such as the Forest Service. • Amendment process: If new data arises, there needs to be re-consideration more often than every 10 years - perhaps every 5 years.

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Table A2-4. Comments from LSSF stakeholders regarding the proposed planning guide. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.

Planning guide section		Comment
		• In the plan, the details of managing forest components other than timber production are less emphasized than the details of timber management, and this is not good. Those other non-timber-extraction components of forest management are less quantifiable but more important for the overall health of the forest. Because they are less quantifiable, they are less easy to deal with, and these non-timber-extraction values often get pushed to the back burner. For this reason, it is necessary at every step to have non-timber-extraction interests represented and the plan should be careful not to de-emphasize these values.
		• There is a lot of emphasis on wood production rather than a healthy ecosystem. • The success of this process depends on keeping the public informed. • A complex plan like this makes it possible to obscure lots of things - are there safe guards to prevent this? • The impression is that timber harvest is the driving force. Stress ecosystem health! • Forest product production seems to be the driving force. At least there is a tendency to equate silviculture with ecosystem management. • I fear that non-forested areas will get lost in the process. I have particular fear that wetlands or other unique features will get lost in the process.
		• Too much of it is traditional 1970's U.S. Forest Service, timber-based, "objective"-type planning. Not integrated well: the criteria and indicators did not link well to the emphasis on OI and forest cover/timber types, nor did values and values protection. Emphasis on OI rather than land type associations reflects traditional view. • Very slim on the monitoring, reporting, assessment and communication needs. • Should probably explicitly emphasize what will need more work, given your background knowledge. • The rationale for various recommendations are not spelled out. Actually, more broadly, alternatives and their strengths and weaknesses are not spelled out. It would be fine to keep some brevity to the planning guide and leave these out, but the references to supporting documents and/or other literature should be included.
		• Planning guide is rather traditional. • Detail proposed in some aspects and omitted in other sections. • I agree with questioners that balance requires greater reporting and detail of new techniques, information sources and analytic strategies.

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Table A2-4. Comments from LSSF stakeholders regarding the proposed planning guide. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.

Planning guide section		Comment
	Verbal comments	• Put land type associations right in forest description. • Monitoring and reporting needs to be beefed up: Put discussion of how people want things monitored and reported at the beginning. • Should emphasize that the three strategies highlighted under Management Strategies are only three of many strategies they will have. • Include general public – modify timeline – call for general public input at each milestone (but not open houses) – include avenue for input from general public in Public Consultation section rather than just in Values Protection section
Management Alternatives and Determination of Sustainability	**Written comments**	• Within MDNR, perhaps there needs to be tolerance and even expectation that lower and mid-level managers will provide data that suggests following procedures that have not been approved by higher level personnel (e.g., within the MDNR, Natural Resource Council or legislature, or the governor). Low to mid-level managers should not fear punishment (job loss, etc.) for suggesting different courses of action. • Sustainable: In discussions it always seems to come down to "sustainable" as referring to timber harvest, whereas "sustainable" should refer to all the values of the forest. There have to be trade-offs but these should be made by consensus, not by one interest group. • Road management also would need to consider any obstructions to movements of wildlife made by roads.
		• Emphasize adaptiveness - must close the loop. Check results of management and feed back into cycle.
		• Regarding discussion of sustainability of "plan" vs. sustainability of "values (or indicators)": – there is no such thing as a sustainable plan - we plan to sustain values. The presentation of management alternative should assess whether objectives (or targets) for values can or will be met under the alternative. If an objective or target is met, the value is sustainable (for some time period). If not, the value is not sustainable. Alternatives can then be compared relative to the values that can or cannot be sustained. – the ability to perform this analysis will be dependent on a thorough understanding of the interactions among values and sustaining (or debilitating) processes.
	Verbal comments	• Should define sustainable before starting the plan so you know what to measure against.
Protection of Non-timber Values	**Written comments**	• Include open areas as a non-timber value and use the Sharptailed Grouse as an indicator. There is a lot of interest currently in restoring open areas within the State Forest.

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Table A2-4. Comments from LSSF stakeholders regarding the proposed planning guide. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.

Planning guide section		Comment
		• Moose is probably a gauge - not a wide spread species across the EUP (only in pockets - certain locations). The pine marten is another species that is possibly a gauge because it was re-introduced about 5-7 years ago. Has this species stabilized yet?
		• Regarding coarse and fine filters: Careful thought should be given to choice of indicators and objectives for these.
		• No planning system can decide values questions once and for all - those have to be decided by a consensus from interested parties, professionals, etc. A planning system can supply data, offer alternative courses of action and record decisions and actions to be made. It can suggest guidelines and should definitely clearly state the values, especially non-timber ones, to be considered. When it comes down to "trade-offs" or compromises between or among different values, those decisions can't always be made in advance and laid out on paper. They have to be made as the plan is put into effect, or, at the later, more detailed planning sessions. It's therefore important not to exclude people representing strong non-timber values from the detailed "working sessions" from which the final plan is evolves. Otherwise, the timber-extraction values will dominate in the final plan; they will "drive" it and that is not desirable - we went through that 100 years ago. We need a broader approach to the forest now. More than just paying lip service to ecosystem planning, we need to incorporate it at every step, especially including the operation of the plan in forest management.
		• Conflict may be inherent in this process - most of the values have a constituency which may not be compatible with spiritual values (e.g. snow sled trails). Does that mean they cannot be solved?
		• Documentation stress was good. • How do you resolve or address larger context issues like intensive vs. extensive management? • Given scarce resources, where do you put them? • The coarse/fine filter process was overstated.
		• Filter terminology may lead to confusion. Aren't we really identifying layers of decision-making? • Isn't the level of resistance you expressed as necessary in the amendment process really in conflict with the concept of adaptive management?
Operational Planning	**Written comments**	• 20-month planning period will have to be extensive rather than intensive on stand examination. Hard to accomplish 10% inventory yearly now!
		• Trying to identify exact stands to be treated will be a problem for the 20-month process. • We can identify candidate stands, but exact stands should be in the annual process.

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Table A2-4. Comments from LSSF stakeholders regarding the proposed planning guide. Multiple written comments made by one individual have been grouped and all verbal comments have been grouped.

Planning guide section		Comment
		• The issue of flexibility was not clarified and there was great divergence on how flexible the 10-year plan could be. It is obvious that under current operating constraints, the MDNR cannot pin down precisely which stands would be treated; they need some level of flexibility. However, it might be productive to serve notice to MDNR administrators that having sustainable forest management will require a significant investment in inventory and information management.
		• Keeping the values list updated requires constant attention. • Publicity about projected operations is vital so people can communicate their values.
		• Emphasis on tie to long range direction was good. • Better clarification needed on what is done in the 20-month planning period and what is done in annual planning. Clarify when spatial designation made. Refine or define potential, eligible, planned and actual acres treated.
		• Benefits of 10-year treatment/project map should not be diminished. Admit to flexibility, hope for accuracy, and build procedure that allows modification.
	Verbal comments	• Perpetual planning was suggested. • Incorporate salvage. • Add recommendation that a good time to review and update values maps is at the time when the public is given the opportunity to review the annual plan.

Appendix 3. CSA Criteria of Sustainable Forest Management

CCFM Criteria and Critical Elements[1]

The Canadian Council of Forest Ministers (CCFM) has developed criteria and indicators to define sustainable forest management in a national context. The six CCFM criteria reflect broad Canadian values to guide sustainable forest management. Each criterion contains a number of critical elements that further refine the scope of the criteria. The SFM System requires that indicators and objectives be set for each critical element of the CCFM criteria, which are listed below.

1. Conservation of Biological Diversity — Biological diversity is conserved by maintaining the variability of living organisms and the complexes of which they are part.

(a) Ecosystem diversity is conserved if the variety and landscape-level patterns of communities and ecosystems that naturally occur on the DFA are maintained through time.
(b) Species diversity is conserved if all native species found on the DFA prosper through time.
(c) Genetic diversity is conserved if the variation of genes within species is maintained.

2. Maintenance and Enhancement of Forest Ecosystem Condition and Productivity — Forest ecosystem condition and productivity are conserved if the health, vitality, and rates of biological production are maintained.

(a) Forest health is conserved if biotic (including anthropogenic) and abiotic disturbances and stresses maintain both ecosystem processes and ecosystem conditions within a range of natural variability.
(b) Ecosystem resilience is conserved if ecosystem processes and the range of ecosystem conditions allow ecosystems to persist, absorb change, and recover from disturbances.
(c) Ecosystem productivity is conserved if ecosystem conditions are capable of supporting all naturally occurring species.

3. Conservation of Soil and Water Resources — Soil and water resources and physical environments are conserved if the quantity and quality of soil and water within forest ecosystems are maintained.

[1] *Excerpted from*: Canadian Standards Association. 1996. A Sustainable Forest Management System: Guidance Document, CAN/CSA-Z808-96 (pg.9).

(a) Physical environments are conserved if the permanent loss of forest area to other uses or factors is minimized, and if rare physical environments are protected.
(b) Soil resources are conserved if the ability of soils to sustain forest productivity is maintained within characteristic ranges of variation.
(c) Water resources are conserved if water quality and quantity is maintained.

4. Forest Ecosystem Contributions to Global Ecological Cycles — Forest conditions and management activities contribute to the health of global ecological cycles. This contribution is maintained if

(a) the processes that are responsible for recycling water, carbon, nitrogen, and other life-sustaining elements are maintained;
(b) utilization and rejuvenation are balanced and sustained; and
(c) forest lands are protected from sustained deforestation or conversion to other uses.

5. Multiple Benefits to Society — Forests provide a sustained flow of benefits for current and future generations if multiple goods and services are provided over the long term. Multiple benefits are maintained if

(a) extraction rates are within the long-term productive capacity of the resource base;
(b) resource businesses exist within a fair and competitive investment and operating climate; and
(c) forests provide a mix of market and non-market goods and services.

6. Accepting Society's Responsibility for Sustainable Development — Society's responsibility for sustainable forest management requires that fair, equitable, and effective forest management decisions are made. Sustainable forest management requires that

(b) forests are managed in ways that reflect social values, and management is responsive to changes in those values;
(c) duly established Aboriginal and treaty rights are respected;
(d) the special and unique needs of Aboriginal peoples are respected and accommodated in forest management decisions;
(e) the decision-making process is developed with input from directly affected and local interested parties;
(f) decisions are made as a result of informed, inclusive, and fair consultation with people who have an interest in forest management or are affected by forest management decisions; and
(g) collective understanding of forest ecosystems, values, and management is increased and used in the decision-marking process.

This report was completed as part of the requirements for a project funded by the Great Lakes Environmental Protection Fund. The objective of the project was to develop a new forest management planning system for the Lake Superior State Forest that meets sustainable forest management standards, specifically those of the Canadian Standards Association and the Forest Stewardship Council.

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Reports generated by this project include:

Project Summary: The Lake Superior State Forest Sustainable Forest Management Pilot Project

An Assessment of the Michigan Department of Natural Resources' Commitment to Sustainable Forest Management

The Lake Superior State Forest: A Description

Michigan Department of Natural Resources Operations Inventory: Survey Results

Roles and Responsibilities for Forest Management Planning in the Lake Superior State Forest

Public Participation in Forest Management Planning in the Lake Superior State Forest: Finding the Right Pathway

Establishing Criteria and Indicators for the Lake Superior State Forest

Workshop I Summary: Values and Indicators of the Lake Superior State Forest

Workshop II Summary: Establishing Targets, Practices and Responsibilities for the Indicators of the Lake Superior State Forest

Modeling Forest Management on the Lake Superior State Forest

Wildlife Habitat Projections for 15 Species in the Lake Superior State Forest

Risk Assessment of Forest Management for the Lake Superior State Forest

A Forest Management Planning Guide for the Lake Superior State Forest

Further information on this report or any of the reports listed may be obtained from:

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